

REMARKS

Status of the Claims

The application was filed with claims 1-45. Claims 1-33 and 40-45 are cancelled to be placed in a later case. Claims 34-39 are pending. Claims 34-39 have been rejected. Claims 34-39 have been amended.

Reconsideration of the application based on the pending claims as amended and arguments submitted below is respectfully requested.

Telephone interview with Examiner

On December 4, 2002 Applicant's attorney, Doug Schelling, participated in a telephone interview with Examiner Teller and Examiner Brumback, as indicated in the Interview Summary. Applicant has received the Examiner's Interview Summary and believes that no additional summary is due from the Applicant.

Elections / Restrictions

During a telephone conversation with the Examiner on August 20, 2002, a provisional election was made without traverse to prosecute the invention of group V, claims 34-39. Affirmation is made of the election to prosecute the invention of group V. Applicant has cancelled claims 1-33 and 40-45.

Drawings

The Examiner mailed a Notice of Draftperson's Patent Drawing Review with the Office Action. Under a separate cover, filed herewith, Applicant has submitted 9 sheets of formal drawings containing figures 1-10. Those sheets contain the requested corrections. Accordingly, Applicant believes that the formal drawings have met the requirements set forth in the Notice of Draftperson's Patent Drawing Review.

Amendment of Specification

Applicant has amended the specification of the application to reflect a drawing correction requested by the Draftperson. Since FIG. 6 has been amended to FIG. 6A and FIG. 6B, Applicant has amended the specification to refer to FIG. 6A and/or FIG. 6B rather than FIG. 6. Applicant has also amended the application to reiterate that certain U.S. Provisional Patent Applications have been identified as provisional applications. Applicant previously identified the U.S. Provisional Patent Applications as such by providing the series code. The Patent Office acknowledged the identification of the provisional applications on the Filing Receipt mailed on July 17, 2001. No new matter has been added by the amendments.

Issues under 35 U.S.C. §112

Claims 34-39 are rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim

the subject matter which Applicant regards as the invention. The Examiner states that the language in claim 34 is allegedly indefinite as it does not describe or define whether stimulation of female sexual maturation actually occurred or if it is only possible. Further, the Examiner states that the language "capable of" and "or fewer" is allegedly indefinite language.

Claims 34-39 have been amended. Support for the amendments is found within the specification. Applicant specifically draws the Examiner's attention to pages 23-25 of the specification. Applicant also directs the Examiner's attention to pages 8 and 12, as they relate to the term Female Sexual Maturation. Applicant believes that in view of the amendments to claims 34-39 the rejection is moot. Accordingly, Applicant respectfully requests that the rejection of the claims under §112 be withdrawn.

Issues under 35 U.S.C. §103

Claims 34-39 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Miller (Science, vol. 291, pp. 2144-47, 2001) in view of the *C. elegans* sequencing consortium (Science, vol. 282, pp 2012-18, 1998). Due to the amendment of claims 34-39 and the arguments presented below, Applicant respectfully requests that this rejection be withdrawn.

Applicant notes that the Examiner did not check the box on the Office Action Summary to acknowledge a claim for domestic priority under 35 U.S.C. §119(e). The non-provisional patent application claims priority to two previously filed

provisional patent applications. The Patent Office acknowledged those priority claims in the filing receipt mailed July 17, 2001.

More specifically, U.S. Provisional Patent Application No. 60/274,358, filed on March 8, 2001, provides the information the Examiner is relying upon in the Miller reference. That provisional patent application contains the scientific information that was ultimately published as the Miller reference. For example, see pages 6-9 of the above-mentioned provisional patent application for disclosure of the information being relied upon by the Examiner. The provisional patent application was filed on March 8, 2001 prior to the March 16, 2001 publication of the Miller reference. For the reasons set forth above, Applicant believes that the Miller reference can not be properly applied. Applicant respectfully requests that the Examiner withdraw the rejection based upon Miller in view of the *C. elegans* sequencing consortium.

On page 6 of the Detailed Action, the Examiner referred to the *C. elegans* sequencing consortium reference. Specifically, the reference provided several reasons for completely sequencing a genome. Such a general comment was not specifically related to the specific protein domain claimed. Applicant argues that such a comment in the *C. elegans* sequencing consortium reference would not provide motivation to modify the reference or provide a reasonable expectation of success with regard to the ability of the claimed protein domain to stimulate female sexual maturation. Furthermore, the functional limitation that the claimed domain actually stimulates female sexual maturation and sheath cell contraction was not even discussed. As discussed above, Applicant argues that the Miller reference can not be properly

applied. Accordingly, the *C. elegans* sequencing consortium reference does not support the rejection under 35 U.S.C. §103. Thus, Applicant respectfully requests that the Examiner withdraw the rejection based upon Miller in view of the *C. elegans* sequencing consortium.

Applicant has commented on some of the distinctions between the cited references and the claims to facilitate a better understanding of the present invention. This discussion is not exhaustive of the facets of the invention, and Applicant hereby reserves the right to present additional distinctions as appropriate. Furthermore, while these remarks may employ shortened, more specific, or variant descriptions of some of the claim language, Applicant respectfully notes that these remarks are not to be used to create implied limitations in the claims and only the actual wording of the claims should be considered against these references.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Marked up Version Showing Specification and Claim Changes Made."

Accordingly, Applicant respectfully requests that these rejections be withdrawn.

The Commissioner is authorized to charge any deficiency or credit any overpayment associated with the filing of this Response to Deposit Account 23-0035.

Respectfully submitted,

A handwritten signature in black ink that reads "Doug Schelling". The signature is written in a cursive, flowing style with a large, stylized "D" and "S".

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Marked-up Version Showing Specification and Claim Changes Made

In the Specification

Please delete the paragraph beginning at page 1, line 8 with "This application ..." and ending on page 1, line 13 with "...reference in its entirety" and replace with the following:

This application claims benefit of U.S. Provisional Patent Application Serial No. 60/205,829 filed on May 19, 2000, entitled "Control of Nematodes, Stimulation of Nematode Resistance, and Screening Methods for Identifying Anti-Nematode Factors", incorporated herein by reference in its entirety and U.S. Provisional Patent Application Serial No. 60/274,358 filed on March 08, 2001, entitled "Control of Nematodes", incorporated herein by reference in its entirety.

Please delete the paragraph beginning at page 5, line 21 with "FIG. 6 displays..." and ending on page 5, line 23 with "...during processing" and replace with the following:

FIG. 6A displays an alignment of a first portion of twenty-seven MSP polypeptides from *C. elegans*. [The SEQ ID Numbers are not meant to include the N-terminal most methionine which is believed to be cleaved during processing.]

FIG. 6B displays an alignment of the second portion of the twenty-seven MSP polypeptides from *C. elegans* shown in FIG. 6A. The SEQ ID Numbers are not meant to include the N-terminal most methionine which is believed to be cleaved during processing.

Please delete the paragraph beginning at page 17, line 12 with "There are likely ..."and ending on page 17, line 18 with "...into polypeptides" and replace with the following:

There are likely more than sixty copies of the MSP gene in the *C. elegans* genome and it is believed that most of these MSP genes are transcribed. Referring to FIGS. 6A and 6B, twenty-seven MSP polypeptide sequences are provided corresponding to polypeptides transcribed from apparently distinct MSP genes or polynucleotide sequences. Certain other nematodes apparently have fewer copies of MSP. For example, *A. suum* are believed to have two copies of an MSP gene both of which are believed to be transcribed into polypeptides.

Please delete the paragraph beginning at page 17, line 19 with "Twenty-seven polypeptide..."and ending on page 18, line 3 with "...Stoye (1998)" and replace with the following:

Twenty-seven polypeptide sequences for FIGS. 6A and 6B are aligned using Divide-and-Conquer Multiple Sequence Alignment which is currently available over the world wide web (www) at the URL <http://bibiserv.techfak.uni-bielefeld.de/dca/>. The server is located at the Practical Computer Science and Bioinformatics research group which is run by Robert Giegerich. The physical location is: Robert Giegerich, AG Praktische Informatik, Technische Fakultät, Universität Bielefeld, Postfach 10 01 31, D-33501 Bielefeld, Germany. The parameters used are Blossum 62 predefined substitution matrix, free shift activated, approximate cut positions activated, recursion stop size L set to 20, window size W set to 0, and weight intensity lambda set to 0. The algorithm and method are disclosed in Stoye (1998).

Please delete the paragraph beginning at page 18, line 4 with "Referring to ..." and ending on page 18, line 9 with "...as shown in FIG. 6" and replace with the following:

Referring to FIGS. 6A and 6B, it is known that the N-terminal most methionine (from the ATG translation start site) is cleaved. It is expected that both forms (with and without the methionine) of MSP polypeptides are active in FSM; therefore, the methionine was included in FIG. 6A. However, the references to the SEQ ID Numbers provided in FIG. 6B correspond to MSP polypeptide sequences of 126 amino acids and are without each N-terminal most methionine as shown in FIG. 6A.

Please delete the paragraph beginning at page 18, line 10 with "Again, referring..." and ending on page 18, line 23 with "...as a percent" and replace with the following:

Again, referring to FIGS. 6A and 6B, the sequences of the numerous *C. elegans* MSP display a high degree of sequence homology. Very few sequence variations are observed. Residues that vary from the global (general) consensus within a column (determined visually) are marked in bold letter and underlined in FIGS. 6A and 6B. Because MSP polypeptide sequences, and even those of the most divergent known nematodes (see below), are so highly conserved; the preferred method for alignment is by visual inspection. For example, two or more MSP polypeptide sequences can be easily lined up next to one another on a computer screen or as written out on a paper and one moved against another until the majority of the bases match. Percent identity between any two sequences is calculated by counting the number of residues that do not match, dividing by the total number of residues in the total sequence being compared (or the shortest of the sequences being compared if one of the pair is shorter in length), multiplying by 100, and expressing the resulting value as a percent.

Please delete the paragraph beginning at page 49, line 24 with "Recombinant MSP..." and ending on page 50, line 12 with "...known in the art" and replace with the following:

Recombinant MSP bacterial strains were produced by cloning MSP-142 and MSP-38 into the pQe-30 6-His vector from Qiagen. Primers specific for MSP were made that contained a 5' BamHI site (5' primer) or a 5' HindIII (3' primer) followed by the respective MSP-coding sequences. MSP-38 and MSP-142 were amplified by PCR, cut with BamHI and HindIII, and ligated into the pQe-30 vector (FIGS. 6A and 6B) which was also cut with BamHI and HindIII. This strategy generated a vector containing an IPTG-inducible promoter followed by an initiator methionine, an N-terminal 6-His tag, and the respective MSP-38 or MSP-142 coding sequences. This construct was then transformed into M15(pREP4) bacterial cells and vector-containing colonies were selected with LB medium containing Ampicillin and Kanamycin. MSP-containing colonies were grown overnight and then MSP expression was induced for 4 hours with 1 mM IPTG. Induced bacteria were pelleted, lysed, and purified using a NiNTA agarose column, which binds the 6-His tag. 6-His purification is known in the art.

In the Claims

Cancel claims 1-33 and 40-45.

Claim 34 (Amended) An isolated nematode major sperm protein domain, comprising: a polypeptide including about 125 [or fewer] consecutive amino acids of a

nematode major sperm protein, wherein the domain [is capable of] stimulat[ing]es a female sexual maturation.

Claim 35 (Amended) The major sperm protein domain of Claim 34, wherein the polypeptide includes [20 or fewer] a segment having at least 10 consecutive amino acids to 20 consecutive amino acids of the nematode major sperm protein, wherein the [domain is capable of] segment stimulat[ing]es [the female sexual maturation] a sheath cell contraction.

Claim 36 (Amended) The major sperm protein domain of Claim 34, wherein the polypeptide includes a segment having 10 to 30 amino acids of the nematode major sperm protein, wherein the [domain is capable of] segment stimulat[ing]es [the female sexual maturation] a sheath cell contraction.

Claim 37 (Amended) An isolated nematode major sperm protein domain, comprising: a polypeptide including about 125 [or fewer] consecutive amino acids as set forth in SEQ ID NO:2 or nematode major sperm protein alignment variants thereof, wherein the domain [is capable of] stimulat[ing]es a female sexual maturation.

Claim 38 (Amended) The major sperm protein domain of Claim 37, wherein the polypeptide includes [20 or fewer] a segment having at least 10 consecutive amino acids to 20 consecutive amino acids, wherein the [domain is capable of] segment stimulat[ing]es [a female sexual maturation] a sheath cell contraction.

Claim 39 (Amended) The major sperm protein domain of Claim 37, wherein the polypeptide includes a segment having 10 to 30 amino acids, wherein the [domain is capable of] segment stimulat[ing]es [a female sexual maturation] a sheath cell contraction.

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on January 2, 2003

Douglas W. Schelling, Ph.D.

Doug Schelling
Signature
Registration Number 48,335

Jan. 2, 2003
Date